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MICROSCOPY.¹

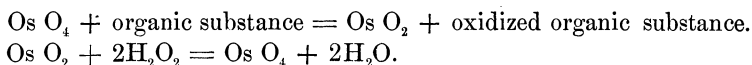
On the Restoration of Osmic Acid Solutions.—The osmic acid so valuable to the histologist as a fixing reagent, is known to the chemist as osmium tetroxide, Os O_4 , and is one of the series of osmium compounds with oxygen. It is readily reduced in the presence of an organic substance, giving up two atoms of oxygen and forming the deutoxide, Os O_2 . This is the well-known black powder so familiar in specimens killed in any of the fluids into which osmic acid enters. Osmium tetroxide affects fatty substances first, and these are the substances that most readily undergo oxidation. Prolonged exposure to the action of the tetroxide blackens the tissue so that it is useless for histological purposes.

In preparing stock solutions of osmium tetroxide the greatest care must be taken to exclude organic matter, even acetic acid in the quantity called for in Flemming's stronger fluid, is liable to cause the reduction of the tetroxide. A trace of impurity in the distilled water sooner or later produces the fatal blackening, while a solution made with pure water will keep indefinitely in the light. Let but a trace of dust fall into the bottle and reduction will take place to some degree.

During the summer of 1892, at the Marine Biological Laboratory at Woods Holl, Mass., a large number of solutions were treated with peroxide of hydrogen, $\text{H}_2 \text{O}_2$, and different investigators tested them with uniformly good results. The restored solutions acted in the same manner as the fresh solutions, and produced the same results; the only noticeable difference was a gradual weakening of the solution, as would naturally be expected. Specimens overblackened by the action of the peroxide were rendered colorless without perceptibly changing the character of the tissue, and a few experiments were made to determine whether the bleaching with peroxide could be so controlled as to leave certain tissues blackened while others were cleared. This quantitative bleaching with peroxide yielded no very good results in the few experiments made, but enough was accomplished to warrant further attempts.

The chemistry of the restoration and the bleaching further demonstrates that no injurious factor enters into the result as is shown by the following equations:

¹This department is edited by C. O. Whitman, University of Chicago.



That is, in bleaching a tissue, the Os O_2 is converted into Os O_4 , and water is formed, with which the tissue is already saturated.

To restore 100 cc. of a 1% solution of osmium tetroxide requires from 10 to 20 drops of fresh peroxide of hydrogen, and clearing goes on better in full sunlight. To bleach tissue with peroxide requires about the same amount in 100 cc. of water, and the bleaching takes place better in the sunlight also. The amount needed cannot be stated with any more precision because the peroxide loses its strength somewhat with age. The peroxide made by the Oakland Chemical Co., 54 South Avenue, New York, is more stable and keeps better than many of the preparations in the market.—C. L. BRISTOL.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

The Geological Society of America.—The Fifth Annual Meeting was held at Ottawa, Canada, on December 28, 1892, and following days. The following papers were read: Notes on the Early Palaeozoic Sponges, Sir J. William Dawson, Montreal, Can.; Notes on the Devonian Formation of Manitoba and the N. W. Territories, J. F. Whiteaves, Ottawa, Ont. The object of this paper was to show the relationship of Devonian formation of Manitoba and the N. W. Territories with that of Northern Europe. In Manitoba the Stringocephalus zone is remarkably well developed and holds a rich fauna, whereas in the Mackenzie River district, most of the fossils so far collected seem to be from the Cuboides zone. On the Coals and Petroleums of the Crows's Nest Pass, Rocky Mountains, A. R. C. Selwyn, Ottawa, Ont.; On the Geology of Natural Gas and Petroleum in Ontario, H. P. Brumell, Ottawa, Ont. A brief résumé of work done in gas and oil explorations in Ontario, and dealing with the geological evidence adduced from record of wells sunk. Including also a short account of the geology of Southwestern Ontario. Some Features of the Phosphate Bearing Rocks of Ottawa County, P. Q., Elfric Drew Ingall, Assoc. Royal School of Mines, Eng. (Introduced by J. B. Tyrrell.) This was a preliminary paper, based upon field observations, discussing the phenomena exhibited by the Apatite deposits and their associated rocks in their bearing upon the question of the probable mode of formation of these deposits. Some Maryland Granites and Their Origin, Charles Rollin Keyes, Des Moines, Ia. A brief sketch of the granite